

Add Shaded Relief to GeoServer

Introduction

This is the tutorial about adding a shaded relief to your map in Geoserver.

Step 0: add your DEM map as GeoTIFF to GeoServer, [see this tutorial](#).

Step 1: create a shaded relief

- Open OSGeo4W Shell
- Set your path to the directory your DEM map is in. You do this by typing 'cd D:\test' for instance. Now this appears: D:\test>
- Make use of the [gdal](#) library (which comes also together with QGIS installation) to generate a DEM. The utility to analyze and visualize DEMs is called [gdaldem](#). Type in the shell:

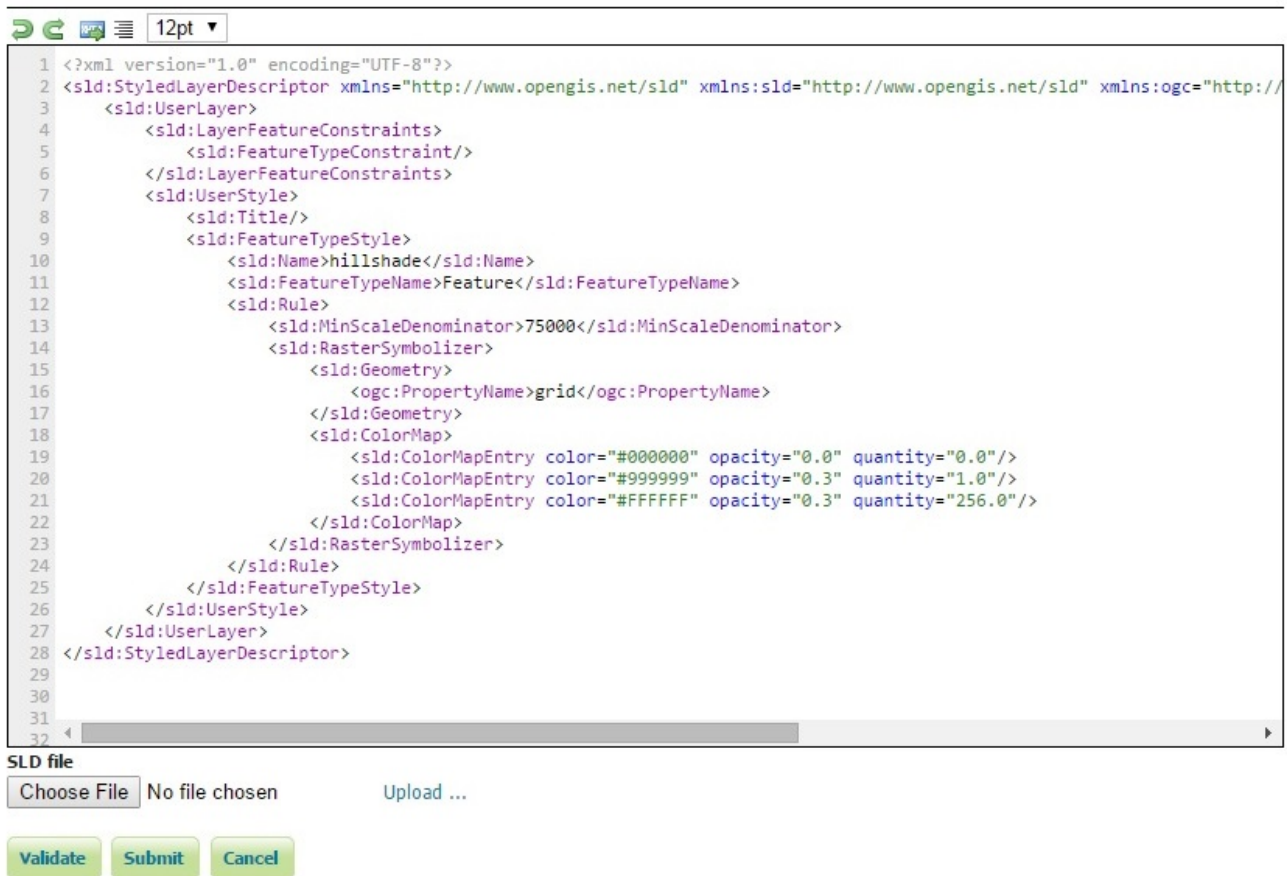
```
gdaldem hillshade input_dem.tif output_hillshade.tif
```

Step 2: open GeoServer

- Click on your windows start button. Open your GeoServer folder. There should be four options: Start GeoServer, Stop GeoServer, GeoServer Homepage Geoserver Admin Page. Click on 'Start Geoserver'.
- Now go to your GeoServer folder again and click on the 'Geoserver Admin Page' and log in.

Step 3: create new layer style

- Go to 'Styles' and 'Add a new style'
- Name your style, e.g. Hillshade, select the workspace you created for the DEM layer and type this:



The screenshot shows the GeoServer SLD editor interface. At the top, there are icons for saving, undo, redo, and a font size dropdown set to 12pt. Below is a text area containing XML code for a Styled Layer Descriptor (SLD). The code defines a hillshade style with a grid geometry and a color map. The color map has three entries: black (opacity 0.0), gray (opacity 0.3), and white (opacity 0.3). Below the text area, there is a section labeled 'SLD file' with a 'Choose File' button, a 'No file chosen' status, and an 'Upload ...' button. At the bottom, there are three buttons: 'Validate', 'Submit', and 'Cancel'.

```
1 <?xml version="1.0" encoding="UTF-8"?>
2 <sld:StyledLayerDescriptor xmlns="http://www.opengis.net/sld" xmlns:sld="http://www.opengis.net/sld" xmlns:ogc="http://
3   <sld:UserLayer>
4     <sld:LayerFeatureConstraints>
5       <sld:FeatureTypeConstraint/>
6     </sld:LayerFeatureConstraints>
7     <sld:UserStyle>
8       <sld:Title/>
9       <sld:FeatureTypeStyle>
10        <sld:Name>hillshade</sld:Name>
11        <sld:FeatureTypeName>Feature</sld:FeatureTypeName>
12        <sld:Rule>
13          <sld:MinScaleDenominator>75000</sld:MinScaleDenominator>
14          <sld:RasterSymbolizer>
15            <sld:Geometry>
16              <ogc:PropertyName>grid</ogc:PropertyName>
17            </sld:Geometry>
18            <sld:ColorMap>
19              <sld:ColorMapEntry color="#000000" opacity="0.0" quantity="0.0"/>
20              <sld:ColorMapEntry color="#999999" opacity="0.3" quantity="1.0"/>
21              <sld:ColorMapEntry color="#FFFFFF" opacity="0.3" quantity="256.0"/>
22            </sld:ColorMap>
23          </sld:RasterSymbolizer>
24        </sld:Rule>
25      </sld:FeatureTypeStyle>
26    </sld:UserStyle>
27  </sld:UserLayer>
28 </sld:StyledLayerDescriptor>
29
30
31
32
```

SLD file

Choose File No file chosen Upload ...

Validate Submit Cancel

- It is important that the opacity is 0.3 so you can still see your original map underneath your hillshade.
- Click 'Validate' and 'Submit'.

Step 4: create new store and save layer

- Go to 'Stores' and 'Add a new store'
- Select 'GeoTIFF' under 'Raster Data Sources'
- Select your workspace, fill in 'Data Source Name' and for 'URL' select your output_hillshade.tif. Now click 'save' and 'publish' your layer.

Step 5: style your layer

- Go to 'Layers', click on the layer you just created and in the Edit Layer screen click 'Publishing'.
- Scroll down to 'WMS Settings' and set the 'Default Style' to the hillshade file you just created.
- Click 'Save'

Step 6: create layer group

- Go to 'Layer Groups' in the left and 'Add new layer group'
- Write down the Bounds or 'Generate Bounds' automatically
- Click 'Add Layer' and in 'Drawing order' select your DEM layer as '1' and the Hillshade layer as '2', so the hillshade is rendered on top of the DEM layer.
- Click 'Save'

Step 7: view your layer group

- Go to 'Layer Preview' and press on 'OpenLayers' for your layer group. Now both the hillshade and the DEM should be visible.